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ABSTRACT

This paper describes subjectivist psychology, discussing its use for guiding teaching and learning. Subjectivist psychology focuses on joint cognitive and affective experiences of learning. It describes the natural affective-cognitive enculturation processes that children experience in learning the skills, understandings, and values of their society. These affect-laden processes of enculturation are transplanted to the constructivist classroom where they become the teaching techniques of the subjectivist teacher. The paper focuses on: constructivism as a cognitivist theory of knowledge; affective multipliers of learning; subjectivism; enculturation and empowerment (the two aims of subjectivism); and design of surface purpose activities. It examines three affective-structuring techniques that are used to design surface purposes (the emotional anchor, the motivator, and the cognitive direction). The paper illustrates the main principles of subjectivist psychology by reported examples of subjectivist teaching in a 7th-grade mathematics class. It presents two surface purpose activities to illustrate applications of subjectivism, both of which teach aspects of circles. The first activity is to revise the names of parts of a circle. The second activity is to appreciate the curvatures of circles. (Contains 44 references.) (SM)

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Subjectivist Psychology: An Affective-Constructivist Pedagogy

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Introduction

This paper describes subjectivist psychology and reports on its use for guiding teaching and learning.

Social Constructivism is currently a popular philosophy guiding thinking in school science and mathematics. Teachers tacitly accept that the affective components of learning can act as powerful multiplying factors in the constructivist classroom and so they endeavour to manage learning to promote interest, motivation, excitement and student's personal involvement. However, there is not as yet an accepted constructivist pedagogy to guide practising teachers of mathematics and science. It is suggested that one of the factors contributing to this state of affairs is that constructivism is a cognitivist philosophy which lacks consideration of the affective concomitants of social learning. Subjectivist psychology, however, focuses on joint cognitive and affective experiences of learning - the subjective experience of the learner.

Subjectivist psychology describes the natural affective-cognitive enculturation processes that children experience in learning the skills, understandings and values of their society. These affect-laden processes of enculturation are transplanted to the constructivist classroom where they become the teaching techniques of the subjectivist teacher. The aims of subjectivist teaching are to empower students and enculturate them into the skills, understandings and values of their subjects. Enculturation techniques centre on needs-driven social communication activities. These value-laden activities are designed to accentuate the students' needs to communicate at the limits of their abilities. This successful communication validates attainment of socially agreed skill levels and confirms acceptance of the values implicit in the activities. Empowerment techniques teach students self-cuing coping strategies and ensure that students take credit for their own success.

The main principles of subjectivist psychology are illustrated by reported examples of subjectivist teaching in a Grade 7 mathematics class.

Constructivism cognitivist theory of knowledge

Constructivism is a popular paradigm for teachers across subjects as diverse as university pharmacy courses to elementary science (Beeth, 1996; Damon, 1997; John & Bancroft, 1989; Lin , 1998; Oliver, 1997). The constructivist approach is widely valued because it can formalise understanding, pose problems of emerging relevance to learners, structure learning around "big ideas" or primary concepts, seek and value students' points of view, adapt curriculum to address students' suppositions, and assess student learning in the context of teaching. It promotes current positive pedagogic values such as active engagement, authenticity, collaboration, community, complexity, generativity, multiple perspectives, subject ownership, personal autonomy, personal relevance, pluralism, reflectivity, self-regulation, and transformation (Brooks & Brooks, 1993; Lebow, 1995; Pirie & Kieren, 1994).

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Although constructivism is a popular and valued teaching paradigm, from Piaget through Bruner to von Glasersfeld it is an overwhelmingly cognitivist theory of knowledge (Bruner, 1960, 1966; Cooper, 1993; Drescher, 1991; Garrison, 1993; Glasersfeld, 1996; Greenberg, 1988; London, 1988; Lyddon, 1990; Mareschal & Shultz, 1996; Niaz, 1995; Quartz & Sejnowski, 1996; Reynolds, 1995; Sigel & Cocking, 1977; Spiro, 1991; Stahl, 1995; Steffe, 1990; Wadsworth, 1971). Constructivism emphasises cognitive aspects of learning at the expense of the affective concomitants of social constructivism (Daniels, 1994; Niaz, 1994).

Affective multipliers of learning

This cognitive emphasis ignores the efforts teachers make to build affective multiplying factors into their lessons to enhance students learning. Good teachers know that affective factors, such as building motivation, interest, curiosity and social recognition have the power to transform routine lessons into exhilarating experiences that drive life long learning and a love of the subject (Arnone & Small, 1995; Beebe & Ivy, 1994; Boekaerts, 1988; Bomia, et al, 1997; Brigham, 1991; Simpson, 1987; Sylwester, 1994) For this quality of teaching is necessary to consider how to use both emotion and cognition together (Carter & Yackel, 1989; Fielding, 1989; London, 1997; Oldfather & Dahl, 1995). As yet there is no rigorous psychological paradigm to show these teachers how to combine affect with constructivism and explain to them why it works. Unfortunately, constructivism has had no pedagogy to guide teachers in using affective adjuncts to cognitive learning in their classrooms (Huinker & Madison, 1995; Hwang, 1996; Roblyer, 1996; Savery & Duffy, 1995; Willis, 1995).

Subjectivism

Now there is Subjectivism. Subjectivism does just this. It is a psychology of the cognitive and affective subjective experience of learning. It adds affective experiences to constructive theory and explains how this acts to enhance learning. The theory also suggests techniques that teachers can use to design Subjective learning experiences for their students in their own classrooms. Subjectivism recognises two overarching aims that teachers have when they use affect multipliers to enhance learning (i) enculturation into the skills, understanding and values of their subject and (ii) empowerment of their students to become self-directed life-long learners. Empowerment and Enculturation go hand-in-hand and are the aims of Subjectivism. Empowerment by Enculturation, and Enculturation by Empowerment, are the twin humanistic intents of the Subjectivist teacher.

These two aims of Subjectivism are achieved through classroom activities called 'surface purposes'. These can be simple rote-learning games or complex need driven social communication assignments. What they all have in common is that surface purpose activities encourage students to disassociate from the 'pedagogic purpose' of the teacher by focussing their awareness on the surface purpose of the activity. What the teacher's pedagogic purposes all have in common is that students should gain some skills, understandings or subject values that are designated by the subject syllabus. Each surface purpose is designed to be such an engrossing experience that the students learn these aspects of the syllabus at the limit of their abilities. The quality of content learning is assessed traditionally by appropriate criterion standards using tests, exams or various performance assignments. The quality of the Subjectivist learning/teaching experience is assessed by asking what students liked or disliked about the activities. Subjectivist teaching and learning are a success when the students only report liking or disliking the surface purposes. The activities should have enabled the students to dissociate from the teacher's pedagogic purposes so that classroom management, content structuring and all the traditional lesson design features are not mentioned because they were so peripheral to the students' learning focus.

Enculturation and empowerment: the two aims of Subjectivism

The enculturation methods that are used in the design of surface purposes are the same naturalistic enculturation processes by which the students gain the skills, understandings, and values of their out-of-school socio-subcultures. Examples of enculturation processes used are peer pressure, social recognition, compliance with authority, shared experience, establishing role identity, in-group bonding, and out-group competition. Students experience content learning through the same enculturation processes by which they experience Enculturation into their families, peer groups, religious sects, community fellowships and institutional associations. The common subjective experience of these processes ensures that, for each student, content learning is an 'authentic' learning experience.

Empowerment aims for students to come to know what content and process talents they have in the subject area. Empowerment is realised by students being increasingly able to identify areas that will interest them and ways in which they personally can most effectively learn in those areas; that is, students increasingly become self-directed learners. To develop empowerment the subjectivist lecturer must induct students into many perspectives of a content area, and ways of understanding it, so that the students have sufficient experiences on which to soundly base their growing empowerment.

Design of surface purpose activities

In practice, the subjectivist teacher empowers students by designing activities that will result in success. However, the hand of the teacher is so well hidden, that the students take complete credit for their success and so feel empowered. Three techniques that are used to accomplish empowerment are: (i) affect-structuring (ii) covert directives and (iii) self-cuing coping strategies. These are techniques that have been adapted from Brief Theory change processes. Affective structuring techniques utilise strong affect for directed motivation towards surface purposes. Covert directives are techniques that deal with the problem that extensive direction is necessary in teaching yet extensive direction undermines empowerment. The subjectivist solution is to use covert directives so that the students have the subjective experience of choosing their actions. Self-cuing coping strategies empower by putting the initiation of meta-cognitive-affective processes under the conscious control of the student. For example, the student can initiate the mental set required for 'critical evaluation' or for 'on-task concentration'. The learner is empowered because the initiation of these states of awareness, that are necessary for different aspects of learning, become under the learner's conscious direction.

There is only space in this paper to briefly illustrate how three affective-structuring techniques are used to design surface-purposes. These three affect-structuring methods are:

(i) The emotional anchor - this ensures the relevance of all learning states
(ii) The motivator - this implies success, recognises ownership, and gives an entrance to the activity
(iii) The cognitive direction - this guides students in organising their tasks and guides them as to what information is relevant to the tasks.

Subjectivist teaching application

Two surface purpose activities are now described to illustrate classroom applications of subjectivism. They both teach aspects of circles.

First activity: to revise the names of parts of a circle

The pedagogic purpose of the first activity was to revise the names of parts of a circle - tangent, circumference, chord etc. The lesson is generic so could have taken place in almost any lower secondary mathematics class. It actually took place in a rural secondary school on the island of Taveuni in the Fijian

group in the south pacific. There were 31 boys and girls sitting in rows of double desks to the front of the class on a concrete floor. The concrete floor was one contextual factor utilised by the male teacher. The other was his knack of drawing on the blackboard, in a instant, an almost perfect circle; which he knew from previous experience much awed the children. For this revision lesson, on the parts of the circle, he asked the children to turn to the children in the next double desk so that they could conveniently work in teams of four. He gave each team of four children a broken piece of chalk. While the children watched him, waiting to know what to do with their chalk, he 'instantly' drew, as if by magic, a near perfect circle on the blackboard, to the astonished surprise of the children. "I wonder which team can draw an exact copy of this circle on the floor at the back of the class". The children were very keen to try but he delayed them by saying. "How will we all know which circle belongs to your team. Your team needs a name to write on their circle. Choose the name of part of a circle for your team". He then gave the easiest examples "such as centre or tangent". After giving the teams a few moments to choose their name, he pointed at each group in turn to ask them what name they would write on their circle. After the third group the names started to be repeated so he pointed much slower with a puzzled look on his face. The children quickly realised that each team must have a different name to write on their circle and so some children asked the first repeaters to choose a different name. As the teacher continued pointing to successive groups you could see the children hoping their name would not be chosen first by another team, and you could see those teams whose name was chosen first quickly trying to find a part of the circle that had not been chosen by an earlier team. Towards the end, when it was more difficult because there were few choices left, other children called out 'helpful' suggestions, which the current team had to evaluate because some of the names suggested had already been chosen.

Analysis of first teaching activity

First we analyze the execution of the pedagogic purpose, which was to rote learn the names to the limit of their ability. The teacher gave the easiest examples knowing these would be chosen first. As is appropriate for rote learning, the names were rehearsed many times; first during the teams' first selection of a name. As each team announced its name all children needed to remember what names had been chosen and to mentally compare these against the other possible choices. This was all done mentally as none of this was written down. When there was any doubt the earlier groups quickly confirmed if their name was being re-chosen. The children then had to remember their own team name throughout the next activity.

Secondly we analyze the subjectivist design and its execution.

The emotional anchor: The teacher used his knack of drawing a near perfect circle that he knew the children would like to emulate.

The motivator: Children realized that their team must have a unique name.

The cognitive direction: The teacher indicated for each group in turn to let others know the name they had chosen.

Empowerment: The teacher had the 'slowest' children in the front desks, and he asked them first, so that they would be sure to succeed. He initiated an obvious pattern of choosing the teams (down each row of double desks from the front) so that the 'next' team were 'self-chosen'. He allowed names to be called out so that at the end everyone could contribute to everyone's success. He also gave recognition to the children's abilities by allowing other teams the authority of confirming if a name was being re-chosen.

Enculturation: The names that a team chose acted symbolically like a logo. Each team was socially bonded by the name upon which they have agreed. "We are the tangents". This was reinforced by publicly claiming ownership of the name when it was mistakenly re-chosen "That's our name!". Individual students sought and got social recognition by calling out a name that was needed by the later groups to choose.

Second activity: to appreciate the curvatures of circles

The second activity was for the teams to draw an exact copy of the blackboard circle on the concrete floor at the back of the class and to name their circle. Teams learnt surreptitiously from one another. For example, when one team member went to measure the circle on the board, members from other teams later followed suit. They also followed the lead of some teams in rubbing out parts of their circle and redrawing these parts of the circumference. Most interestingly, some teams who wrote their name anywhere on the their circle, saw that others had drawn the part of the circle corresponding to their name and had written their name on the appropriate part and copied this idea. Teams that finished first went around comparing the work of other's to their own.

When all were finished the teacher asked everyone to stand back against the walls "so we can see how well you have done". After the circles and names had been perused for a few moments he asked the students to decide which circle was the best, other than their own. After a few more moments he said "go and stand in the circle you think is the best - not your own". Students were given time to change between circles for their own reasons (social or judgmental). There was some laughter as many students tried to stand in one of the better circles. That was the end of that activity.

We now analyse the design and execution of the pedagogic purposes which were to (i) again revise the parts of a circle (ii) appreciate the constant curvature of a circle of fixed size, and (iii) appreciate how the curvature 'flattens' as the size of the circle increases. The following observations indicate how each of these pedagogic purposes was achieved:

(i) To enhance rote learning of the names the activity encouraged rehearsal of the names in two ways. First, most teams realised that it was 'better' to write their team name on the appropriate part of their circle. Secondly, when comparing circles from the side of the classroom, students found it necessary to name the circles as well as point to the ones to which they were referring. (ii) Some students started drawing 'instant' circles as the teacher had done. These needed a lot of redrawing and repairing. In order to do this students needed to appreciate the constant curvature of their circle. Similarly, students worked within their teams to criticise irregular curvatures, agree on which parts should be rubbed out, and changed and recharged the circumferences to their own standards. (iii) Students copied the idea of taking measurements from the board to be more exact. These students had to 'flatten' or 'bend' the curvature of their circles when they realised that they had drawn them either too large or too small.

We now analyse the subjectivist design and its execution.

The emotional anchor: This continued from part one. The children wanted to emulate the teacher's fast, perfect drawing of a circle.

The motivator: Children saw how 'easily' the teacher did it and wanted to show they could be as good at it as their teacher.

The cognitive direction: The teacher indicated that the children could go and draw their circles on the concrete floor of the classroom.

Empowerment: Children were not subservient to the teacher's commands. Only one 'instruction' was given: an indication to start. Children choose their own areas in which to draw, how/what to draw, what/when to change their drawing, the standard required and when to stop. Most importantly, the children were given the social constructivist power to define the 'right' answer. The teacher did not use his authority to decide which was the best result. The children each made their own choice. The 'correct answer' was not even ratified by the teacher's authority, but by the children's choices. In addition, all the drawing decisions were negotiated within the teams. Hence, students who made these decisions were empowered by their team's endorsement. At the close of the activity, by moving away from team action toward individual

decision, and preventing self-choice by a team member, the individual was not felt to have 'lost' as the bonding within 'losing' teams was broken. On the contrary, individuals could 'win' by standing in a circle with their peers.

Enculturation: There was no teacher interference with the working of the teams. Students negotiated roles, decisions and standards within their teams as they do out of school. There was some inter-team competition in the team mode, when groups copied what they thought were good ideas from other teams (positioning the name, measuring the circle size, trying to copy the 'movement' used by the teacher). For the final judgement, it was evident from the changing and rechanging of positions, that peer pressure, leadership expectations, and other enculturation processes came into play to influence the final choice of where to stand. Finally, the activity ended with children laughing and hugging each other to help stay inside the circles they had chosen. 'Right' or 'wrong', they experienced enjoyment in the process of learning mathematics. These two activities lasted from 11:10am to 11:30am.

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